PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	BSc (Hons)
4	**Programme Title**	G1N4 Mathematics with Business 1556U Mathematics with Business with Placement Year G1N2 Mathematics with Management* G1NY Mathematics with Management with Placement Year* *programmes are withdrawn from admission effective from September 2019
5	**UCAS/Programme Code**	See 4.
6	**Programme Accreditation**	Institute of Mathematics and its Applications
7	**QAA Subject Benchmark(s)**	Mathematics, Statistics and Operational Research
8	**FHEQ Level**	6
9	**Date written/revised**	July 2021

10	**Programme Aims**
1	To provide an integrated but flexible degree structure, enabling each student to study two-thirds mathematics and statistics, together with the study of the major processes of business management.
2	To produce graduates who have a sound, broad knowledge of the fundamental aspects of mathematics and statistics, complemented by knowledge of specialist areas, and an awareness of applications of these subjects.
3	The programme allows students to develop the ability to reason logically and their capacity for mathematical and statistical thinking, and to equip students with a range of subject-related key skills.
4	To equip students with the knowledge and skills to apply mathematics and statistics in the business world.
5	To provide a basic understanding of the processes of business management.
6	To provide an understanding of model assumptions and when they are violated.
7	To give a broad understanding of the business world.
8	To provide a sound grounding in some key aspects of management.
9	For those students taking Mathematics with Business (with Industrial Placement), to provide students with a period of practical experience and the opportunity to develop their work place skills.
For students on the Placement Year programme:	
10	Provide students with the experience of seeking and securing a position with an employer.
11	Facilitate independent self-management and proactive interaction in a non-university setting.
12	Provide a period of practical work experience that will benefit current academic study and longer term career plans.
13	Enable students to ethically apply their knowledge and skills in the work place, reflect upon their development and effectively evidence and articulate their learning in relevant future settings.

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the benchmark statements for Mathematics and Statistics.

Knowledge and Understanding

On successful completion of the programme students should have:

A1 A broad understanding of fundamental concepts and methods of mathematics and statistics.

A2 Knowledge and experience of theoretical concepts and analytical techniques in mathematics and statistics.

A3 Further broad knowledge of a number of topics in mathematics and statistics or a more specialist knowledge of particular areas within these subjects, as appropriate to the pathway chosen and as reflected in the degree title awarded.

A4 A broad understanding of fundamental concepts in business management.

A5 More advanced knowledge of enterprise and entrepreneurship.

For students on the Placement Year programme:

A6 Apply personal and professional development strategies to prioritise, plan, and manage their own skills development and learning.

A7 Research, select and apply relevant knowledge aimed at enhancing their own skills and effectiveness in specific duties at their placement.

A8 Demonstrate an understanding of a work environment, how it functions and their contribution to it.

A9 Relate their work based learning to other areas of personal development, including academic performance.

Teaching and Learning Methods

Lectures are the principal vehicle for presenting the essential material which defines the module, and provide the key element towards achieving the learning outcomes A1-A5. Problem classes are used to support lectures and enhance students' understanding by providing an opportunity to clarify issues arising from lectures and work through additional examples. In Stage 1, there is a module that includes regular seminars where students present solutions to mathematical problems. Seminars are used in some of the Business School modules.

Assessment Strategy

The standard assessment format, used for nearly all modules, is based on an unseen written examination (counting for at least 70% of the assessment), together with an appropriate mixture of course assignments, in-course tests and mini-projects. These methods all enable assessment of the Learning Outcomes A1-A5. Assessment by unseen examinations is seen as a valid and reliable method of assessing both ability and knowledge. Details of the specific assessment modes and weightings, for each module, are set out in the module specification in the Module Catalogue.

In Stages 2 and 3, the MAS modules use a standard format for examination papers in which there is a Section A, consisting of short, straightforward questions which cover the whole module, and a Section B with questions designed to test a greater depth of understanding. In Stage 1, there are a variety of short and medium length questions enabling the students to demonstrate their knowledge of the subject unconstrained by the need to answer complete long questions.

Intellectual Skills

On successful completion of the programme students should be able to:

B1 Formulate problems.

B2 Prove results by following a sequence of logical steps.

B3 Solve problems.

B4 Present data in an understandable way.
B5 Interpret data.
B6 Critically evaluate arguments and evidence.

Teaching and Learning Methods

Regular drop-in sessions are used in all Stages to give students the opportunity to ask individual questions about exercises and to clarify issues arising from lectures. This helps with learning outcomes B1-B3 in most mathematics modules and with B4 and B5 in most statistics modules. Seminars are used in the ACC and BUS modules to achieve learning outcome B6.

Assessment Strategy

In-course tests and coursework assignments are designed to allow students to test and develop these intellectual skills. Typically there are three or four assessments in a 10 credit module: a combination of in-course tests, written assignments, mini-project and computer based assessments (CBAs), as appropriate to the module. Stage 1 modules usually have five assessments. Model solutions to all written assignments are made available to students when the marked work is returned, sometimes earlier if appropriate. Marked work is returned within two weeks of the submission date. Computer based assessments are used in Stage 1 and, to a lesser extent, in Stage 2 to help the students to develop their problem solving skills (B3). The students are given access to try questions in CBA practice mode and then a fixed period to attempt randomly generated questions in 'exam' mode. Having completed an assignment, they are given their marks and the full solutions. In-course tests give students practice in problem solving under exam-like conditions (B3). All forms of in-course assessment contribute to both formative and summative assessment. In Business School modules, seminar diaries and essays are used to assess the students' understanding (B3 and B6).

Practical Skills

On successful completion of the programme students should be able to:
C1 Use the mathematical programme Python to solve various mathematical problems.
C2 Use the statistical programming language R to solve various statistical problems.
C3 Analyse business information and operations in order to make management decisions.

Teaching and Learning Methods

Practical classes, held in a computer teaching laboratory, introduce students to the use of computer packages (R and Python). These packages will be met in a Stage 2 mathematical computing module for Major/Minor and Joint Honours students. In later Stages, students are expected to use the computer network, as appropriate, for homework assignments or minor projects. Such work often starts in a practical session and is finished in the student's own time. Analysis of business information skills are developed in seminars (C3).

Assessment Strategy

Computing skills are assessed through tests and mini projects or through questions in coursework assignments (C1-C3).

Transferable/Key Skills

On successful completion of the programme students should be able to:

D1 Write project reports using Word.
D2 Demonstrate a high level of numeracy.
D3 Demonstrate a high level of computer literacy.
D4 Manage time and prioritise tasks by working to strict deadlines.
D5. Communicate orally and in written form in English.
D6 Work in a team.

For students on the Placement Year programme:
D7 Reflect on and manage own learning and development within the workplace.
D8 Use existing and new knowledge to enhance personal performance in a workplace environment, evaluate the impact and communicate this process.

D9	Use graduate skills in a professional manner in a workplace environment, evaluate the impact and communicate the personal development that has taken place.

Teaching and Learning Methods

Students' learning is supported by weekly or fortnightly exercises (D2 and D3). Project work is normally started within practical sessions (D1 and D3). Further support is given in drop-in sessions (D2). Short presentations in Stage 1 introduce presentations skills (D5). Seminars in Business School modules develop the students' communication skills (D5).

Assessment Strategy

Many statistics modules and some mathematical modules have a project element (D1 and D3). Most modules involve exercises which improve numeracy (D2). Most Business School modules involve writing essays (D5) and some involve group work (D6).

12 Programme Curriculum, Structure and Features

Basic Structure of the programme

Mathematics with Business lasts three years and comprises 360 credits spread equally over the three Stages.

Mathematics with Business (with Industrial Placement) lasts four years and comprises 360 credits spread equally over three Stages together with the placement year. Students are not admitted to a programme with a placement year, but may transfer early in Semester 2 of Stage 2.

In Stage 1, the Schools aims first to consolidate and reinforce the students' knowledge on entry and to provide a sound body of introductory material in mathematical methods and in the three subject areas of Applied Mathematics, Pure Mathematics and Statistics. This provides the foundation for subsequent study in these areas. This comprises 80 credits of compulsory material. Also in Stage 1, students are required to study 40 credits of appropriate compulsory modules in Management.

At Stage 2 students take 30 credits of Applied Mathematics modules, 30 credits of Statistics modules, a mathematical computing module and a financial mathematics module, and 40 credits of Management modules. All modules are compulsory.

At Stage 3 students take 40 credits of Management modules and select from a range of Applied Mathematics and Statistics modules offered by the School.

Students on the Placement Year programme will be on placement year between Stages 2 and 3 of their programme.

Key Features of the programme (including what makes the programme distinctive)

A distinctive feature of the School's curriculum is the flexible structure, operating within the University's modular system, in which students can choose pathways which provide either:

a) a broad education in mathematics, statistics and business throughout their programme of study, or
b) a general grounding in mathematics, statistics and business followed by more specialised study of chose areas

Subject to approval, students may transfer to a programme including a placement year between Stage 2 and 3.

Programme Regulations (line to on-line version):

G1N4 Mathematics with Business

1556U Mathematics with Business with Placement Year

G1N2 Mathematics with Management*

G1NY Mathematics with Management with Placement Year*

*programmes are withdrawn from admission effective from September 2019

13 Support for Student Learning

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf
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14 Methods for evaluating and improving the quality and standards of teaching and learning

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

Accreditation reports
None.

Additional mechanisms
None

15 Regulation of assessment

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

In addition, information relating to the programme is provided in:
The University Prospectus: http://www.ncl.ac.uk/undergraduate/degrees/#subject Degree Programme and University Regulations: http://www.ncl.ac.uk/regulations/docs/

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided.